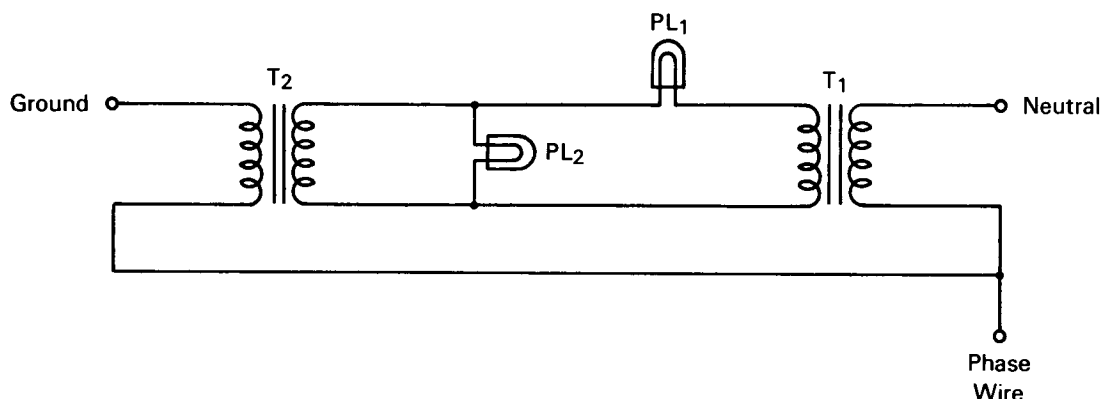


NASA TECH BRIEF



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Two-Light Circuit Continuously Monitors AC Ground, Phase, and Neutral Wires



The problem:

To provide a means of monitoring the continuity of the ground, neutral, and phase wires of an ac circuit. Redundant ground straps used to insure proper grounding have no monitor, can constitute safety hazards, and give no indication if either the phase or neutral lines should become open-circuited.

The solution:

A two-transformer, two-lamp circuit designed to give different visual indications if any one of the three lines is open-circuited.

How it's done:

The circuit consists of two transformers and two pilot lamps wired as shown. With all circuits connected and performing properly, pilot lamp PL₂ should be illuminated and PL₁ should be off. The primary of T₂ is energized by current from the phase wire to the ground wire, thus energizing the secondary of T₁ in phase with the secondary of T₂. PL₁ will

not be illuminated since there is no difference in potential across its terminals.

A loss of the ground wire will de-energize T₂ and PL₂ will go off. T₁ secondary is still energized, thus illuminating PL₁. The ac impedance of the secondary of T₂ is much less than that of PL₂, hence PL₂ will remain off.

A loss of the neutral wire will de-energize T₁, allowing the secondary of T₂ to energize both PL₁ and PL₂ since they are in parallel with respect to T₂.

A loss of the phase wire will de-energize all circuits and extinguish both lights.

Note:

Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas, 77001
Reference: B66-10163

(continued overleaf)

Patent status:

No patent action is contemplated by NASA.

Source: R. W. Mee
of North American Aviation, Inc.
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Manned Spacecraft Center
(MSC-356)